ERTS Contracting Officer
Code 245, GSFC
Greenbelt, Maryland 20771

Subject Type I Progress Report for ERTS-1

Period Covered: March and April, 1973

A. Title: Investigation to Develop a Multistage Forest Sampling Inventory System Using ERTS-1 Imagery. PR 126

B. Principal Investigator: Philip G. Langley
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C. Problems Impeding Investigation:

None at present. We have received all digital tapes. We also have received a precision processed image.

D. Accomplishments:

1. This period

As outlined in the previously submitted Type II report, our research effort continues now in two different areas, namely (1) manual photo interpretation of the primary sample units as annotated on the ERTS images, and (2) digital interpretation of these sample units. At the moment our major effort is directed towards the digital photo interpretation system.

To date, we have developed most of the image handling system with which primary sample units can be retrieved for digital processing. Images can be retrieved and stored in two steps (1) any desired area can be copied from the original MSS CCT tapes and transferred to other tapes by channel, and (2) using accurately computed image coordinates of the sample units, any sample unit or combination of sample units can be copied from the secondary tapes to fast disk storage for subsequent digital interpretation operations. The last step can be repeated using random access storage instead of data tapes so that in effect an unlimited subsetting capability has been acquired.

In the tape copying process the data configuration is changed to confirm with the word structure of the UNIVAC 1108 on which all processing will take place.

Ocular inspection of the areas copied from the MSS CCT tapes, by printing the video samples as characters, has revealed no anomalies that could hamper the digital interpretation process.

2. Plans for next period

The next stage in the development of a digital interpretation capability will be the extraction of image features. These features will then be analyzed and fed into a classifier. The image corresponding to a multiple of primary sample units will be divided into 8 x 8 arrays from which we will extract overall tone and texture information through the application of 8 x 8 Walsh transforms. The resulting features will be inspected, combined or deleted and then be subjected to a clustering type of classifier based on a vector field approach.

Research is now underway to implement these steps and preliminary results are expected in the next reporting period.

E. Significant Results

No significant results beyond those described in our previous Type II report have been obtained in this reporting period. We have been primarily engaged in the development of the component parts of our digital interpretation system, using the recently acquired MSS CCT tapes.

F. Publications

No publications were released during this period.

G. Recommended Changes

No major changes in procedure are recommended at this time.

H. Changes in Standing Order Forms

None required.

I. ERTS Image Descriptor Forms

No image descriptor forms are enclosed.

J. Data Request Forms

No new data request forms were submitted.

Submitted for Philip G. Langley

Principal Investigator
PR-126

By

J. W. van Roessel

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